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EXAMINER	
SHERMAN, STEPHEN G	
ART UNIT	**PAPER NUMBER**
2674	

DATE MAILED: 08/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/606,789	BU, LIN-KAI	
	Examiner	Art Unit	
	Stephen G. Sherman	2674	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 June 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *27 June 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 3/5/04
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities: On page 13, line 7 there is reference made to "Gray-scale voltages V01 to V0191 generated...according to reference voltages V4 to V8." That are located in Figure 5, however, Figure 5 shows grayscale voltages V00 to V0191.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

2. Claims 1-23 are rejected under 35 U.S.C. 102(a) as being anticipated by Okuzono (US 6,727,874).

Regarding claim 1, Okuzono discloses a gamma correction apparatus for outputting a corresponding pixel voltage according to a pixel signal for a liquid crystal display (LCD), wherein the LCD has a plurality of pixels used to display a plurality of colors, the gamma correction apparatus (Figure 1, items 1 and 22. Item 1 is the LCD

panel, which would contain pixels used to display a plurality of colors, and item 22 contains the gamma correction apparatus) comprising: a gray-scale voltage generating circuit (Figure 4, item 22), which comprises: a common gray-scale voltage generating circuit for generating a plurality of common gray-scale voltages (Figure 5, item 29); and a plurality of individual gray-scale voltage generating circuits (Figure 6, item 32_R and column 13, lines 39-46), coupled to the common gray-scale voltage generating circuit (Figure 4, items 23 and 25 are coupled together in which 23 contains the common gray-scale voltage generating circuit and item 25 contains the individual gray-scale voltage generating circuits), each of which generates a plurality of individual gray-scale voltages corresponding to one of the colors (Column 13, lines 39-42), wherein the values of the individual gray-scale voltages generated by each individual gray-scale voltage generating circuit is determined according to what color the individual gray-scale voltage generating circuit corresponds to (Column 13, lines 39-46); and a gamma correction circuit (Figure 6, item 33_R), coupled to the gray-scale voltage generating circuit (Figure 6, item 33_R, the gamma correction circuit, is coupled to item 32_R, the individual gray-scale voltage generating circuit which is a part of the gray-scale voltage generating circuit), according to a corresponding color of the pixel signal, for selectively using the common gray-scale voltages and the corresponding individual gray-scale voltages of the corresponding color to determine the corresponding pixel voltage and outputting the corresponding pixel voltage (Column 13, lines 55-65).

Regarding claim 2, Okuzono discloses a gamma correction apparatus according to claim 1, wherein the common gray-scale voltage generating circuit comprises a

series of resistors with a plurality of connecting nodes wherein each of the common gray-scale voltages is generated through a corresponding one of the connecting nodes (Figure 5, item 29 shows a plurality of resistors 31_{255}-31_0 and a plurality of connecting nodes located between the resistors and V_{REF} and ground. Each of the gray-scale voltages V_{255}-V_0 can be generated through one the connecting nodes).

Regarding claim 3, Okuzono discloses a gamma correction apparatus according to claim 1, wherein each of the individual gray-scale voltage generating circuits (Figure 6, item 32_R) has a plurality of input nodes (Figure 6, V_{R0}-V_{R17}) with each of the input nodes being coupled to a corresponding input voltage source (Figure 6, V_{R0}-V_{R17} correspond to input voltages from item 23 in Figure 4) which supplies a corresponding reference voltage to the individual gray-scale voltage generating circuit coupled thereto (Figure 6, item 32_R is the individual gray-scale voltage generating circuit).

Regarding claim 4, Okuzono discloses a gamma correction apparatus according to claim 3, wherein the value of the reference voltage supplied is determined according to the color corresponding to the individual gray-scale voltage generating circuit coupled to the corresponding input voltage source (Column 12, lines 66-67 and Column 13, lines 1-7. The examiner interprets this to mean that color determines the reference voltage taken from the common gray-scale voltage generating circuit which is supplied to the individual gray-scale voltage generating circuit which corresponds to that color and coupled to the input voltage source).

Regarding claim 5, Okuzono discloses a gamma correction apparatus according to claim 3, wherein the input nodes of each individual gray-scale voltage generating

circuit are disposed therein according to the color corresponding to the individual gray-scale voltage generating circuit (Figure 6, items V_{R0}-V_{R17} are the input nodes which correspond to the individual gray-scale voltage generating circuit 32_R).

Regarding claim 6, Okuzono discloses a gamma correction apparatus according to claim 3, wherein each individual gray-scale voltage generating circuit has a plurality of output nodes for generating the individual gray-scale voltages according to the reference voltages (Figure 6, item 32_R and column 13, lines 49-55. The output nodes can be seen in Figure 6 running from between the resistors 34_1-34_{255} into item 25_R).

Regarding claim 7, Okuzono discloses a gamma correction apparatus according to claim 6, wherein each individual gray-scale voltage generating circuit is a voltage divider with a series of resistors with a plurality of connecting nodes (Figure 6, item 32_R).

Regarding claim 8, Okuzono discloses a gamma correction apparatus according to claim 1, wherein the colors include red, green and blue colors (Column 13, lines 39-42).

Regarding claim 9, Okuzono discloses a gamma correction apparatus according to claim 8, wherein the individual gray-scale voltage generating circuits are: a red gray-scale voltage generating circuit for generating a plurality of red gray-scale voltages (Figure 6, item 32_R and Column 13, lines 39-46); a green gray-scale voltage generating circuit for generating a plurality of green gray-scale voltages (Column 13, lines 39-46); and a blue gray-scale voltage generating circuits for generating a plurality of blue gray-scale voltages (Column 13, lines 39-46); wherein the gamma correction circuit outputs the pixel voltage corresponding to the pixel signal according to: the common gray-scale

voltages and the red gray-scale voltages when the pixel signal is used to display the red color (Figure 4, item 23, the common gray-scale voltages are generated, and item 25, which uses the common gray-scale voltages to produce the red gray-scale voltages in Figure 6, item 32_R); the common gray-scale voltages and the green gray-scale voltages when the pixel signal is used to display the green color (Figure 4, item 23, the common gray-scale voltages are generated, and item 25, which uses the common gray-scale voltages to produce the green gray-scale voltages in Figure 6, item 32_G, as explained in column 13, lines 39-46); and the common gray-scale voltages and the blue gray-scale voltages when the pixel signal is used to display the blue color (Figure 4, item 23, the common gray-scale voltages are generated, and item 25, which uses the common gray-scale voltages to produce the blue gray-scale voltages in Figure 6, item 32_B as explained in column 13, lines 39-46).

Regarding claim 10, Okuzono discloses a gamma correction apparatus for outputting a corresponding pixel voltage according to a pixel signal for a liquid crystal display (LCD), wherein the LCD has a plurality of pixels used to display red, green, and blue colors (Figure 1, items 1 and 22. Item 1 is the LCD panel, which would contain pixels used to display red, blue and green colors, and item 22 contains the gamma correction apparatus), the gamma correction apparatus comprising: a gray-scale voltage generating circuit (Figure 4, item 22), comprising: a common gray-scale voltage generating circuit for generating a plurality of common gray-scale voltages (Figure 5, item 29); a red individual gray-scale voltage generating circuit coupled to the common gray-scale voltage generating circuit for generating a plurality of red gray-scale voltages

(Figure 4, shows items 23 and 25 coupled together, which represent the common and individual gray-scale voltage generating circuits. Figure 6, item 32_R shows the red individual gray-scale voltage generating circuit for generating a plurality of red gray-scale voltages); a green individual gray-scale voltage generating circuit coupled to the common gray-scale voltage generating circuit for generating a plurality of green gray-scale voltages (Figure 4, shows items 23 and 25 coupled together, which represent the common and individual gray-scale voltage generating circuits. Figure 6, item 32_G shows the green individual gray-scale voltage generating circuit for generating a plurality of green gray-scale voltages as explained in column 13, lines 39-46); and a blue individual gray-scale voltage generating circuit coupled to the common gray-scale voltage generating circuit for generating a plurality of blue gray-scale voltages (Figure 4, shows items 23 and 25 coupled together, which represent the common and individual gray-scale voltage generating circuits. Figure 6, item 32_B shows the blue individual gray-scale voltage generating circuit for generating a plurality of blue gray-scale voltages as explained in column 13, lines 39-46); and a gamma correction circuit coupled to the gray-scale voltage generating circuit (Figure 6, item 25_R) wherein the gamma correction circuit outputs the pixel voltage corresponding to the pixel signal according to: the common gray-scale voltages and the red gray-scale voltages when the pixel signal is used to display the red color (Column 13, lines 55-65); the common gray-scale voltages and the green gray-scale voltages when the pixel signal is used to display the green color (Column 13, lines 55-65. It is understood from column 13, lines 39-46 that only the red circuit is described in detail but that the green circuit would be similar to the red

circuit); and the common gray-scale voltages and the blue gray-scale voltages when the pixel signal is used to display the blue color (Column 13, lines 55-65. It is understood from column 13, lines 39-46 that only the red circuit is described in detail but that the blue circuit would be similar to the red and green circuits).

Regarding claim 11, Okuzono discloses a gamma correction apparatus according to claim 10, wherein: the red gray-scale voltage generating circuit (Figure 6, item 32_R) has a plurality of input nodes (Figure 6, V_{R0}-V_{R17}) with each of the input nodes being coupled to a corresponding input voltage source which supplies a corresponding reference voltage to the red gray-scale voltage generating circuit coupled thereto (Figure 6, V_{R0}-V_{R17} correspond to input voltages from item 23 in Figure 4); the green gray-scale voltage generating circuit has a plurality of input nodes with each of the input nodes being coupled to a corresponding input voltage source which supplies a corresponding reference voltage to the green gray-scale voltage generating circuit coupled thereto (In column 13, lines 39-46 it is understood that the green circuit is not described but would be similar to that of the red circuit as already described); and the blue gray-scale voltage generating circuit has a plurality of input nodes with each of the input nodes being coupled to a corresponding input voltage source which supplies a corresponding reference voltage to the blue gray-scale voltage generating circuit coupled thereto (In column 13, lines 39-46 it is understood that the blue circuit is not described but would be similar to that of the red circuit as already described).

Regarding claim 12, Okuzono discloses a gamma correction apparatus according to claim 11, wherein the red gray-scale voltage generating circuit includes a

plurality of output nodes for generating the red gray-scale voltages according to the reference voltages thereof (Figure 6, item 32_R and column 13, lines 49-55. The output nodes can be seen in Figure 6 running from between the resistors 34_1-34_{255} into item 25_R); the green gray-scale voltage generating circuit includes a plurality of output nodes for generating the green gray-scale voltages according to the reference voltages thereof (In column 13, lines 39-46 it is understood that the green circuit is not described but would be similar to that of the red circuit as already described); and the blue gray-scale voltage generating circuit includes a plurality of output nodes for generating the blue gray-scale voltages according to the reference voltages thereof (In column 13, lines 39-46 it is understood that the blue circuit is not described but would be similar to that of the red circuit as already described).

Regarding claim 13, Okuzono discloses a gamma correction apparatus according to claim 12, wherein the red gray-scale voltage generating circuit, the green gray-scale voltage generating circuit, and the blue gray-scale voltage generating circuit each include a series of resistors with a plurality of connecting nodes (Figure 6, item 32_R and column 13, lines 39-46).

Regarding claim 14, Okuzono discloses a gamma correction apparatus according to claim 13, wherein at least one of the connecting nodes is the input node, at least one of the connecting nodes is the output node, and at least one output node is the input node (In Figure 6, item 32_R it can be seen that the input node V_{R0} connects to output node that would correspond to V_{GR0} as explained in column 13, lines 49-55).

Regarding claim 15, Okuzono discloses a liquid crystal display (LCD) (Figure 1, item 1), comprising: a plurality of pixels for displaying a plurality of colors (An LCD panel is inherently known to contain a plurality of pixels for displaying a plurality of colors); and a gamma correction apparatus (Figure 4, item 22), which outputs a corresponding pixel voltage according to a pixel signal (Column 13, lines 55-65), comprising: a gray-scale voltage generating circuit (Figure 4, item 22), comprising: a common gray-scale voltage generating circuit for generating a plurality of common gray-scale voltages (Figure 5, item 29); and a plurality of individual gray-scale voltage generating circuits, coupled to the common gray-scale voltage (Figure 4, item 25 is coupled to item 23 which contains item 29 of Figure 5 where item 25 of Figure 4 contains individual gray-scale voltage generating circuits 25_R, 25_B and 25_G as explained in lines 39-46 of column 13), for generating a plurality of individual gray-scale voltages, wherein each individual gray-scale voltage generating circuit corresponds to one of the colors (Column 13, lines 39-42), and the values of the individual gray-scale voltages generating from each individual gray-scale voltage generating circuit is determined according to what color the individual gray-scale voltage generating circuit corresponds to (Column 13,lines 49-55); and a gamma correction circuit (Figure 6, item 33_R), coupled to the gray-scale voltage generating circuit (Figure 6, item 33_R, the gamma correction circuit, is coupled to item 32_R, the individual gray-scale voltage generating circuit which is a part of the gray-scale voltage generating circuit), according to a color corresponding to the pixel signal, for selectively using the common gray-scale voltages and the corresponding individual

gray-scale voltages to determine the corresponding pixel voltage and outputting the corresponding pixel voltage (Column 13, lines 55-65).

Regarding claim 16, Okuzono discloses an LCD according to claim 15, wherein the common gray-scale voltage generating circuit comprises a series of resistors with a plurality of connecting nodes wherein each of the common gray-scale voltages is generated through one of the connecting nodes (Figure 5, item 29 shows a plurality of resistors 31_{255}-31_0 and a plurality of connecting nodes located between the resistors and V_{REF} and ground. Each of the gray-scale voltages V_{255}-V_0 can be generated through one the connecting nodes).

Regarding claim 17, Okuzono discloses an LCD according to claim 15, wherein each of the individual gray-scale voltage generating circuits (Figure 6, item 32_R) has a plurality of input nodes (Figure 6, V_{R0}-V_{R17}) with each of the input nodes being coupled to a corresponding input voltage source (Figure 6, V_{R0}-V_{R17} correspond to input voltages from item 23 in Figure 4) which supplies a corresponding reference voltage to the individual gray-scale voltage generating circuit coupled thereto (Figure 6, V_{R0}-V_{R17} can be seen to input or supply a corresponding reference voltage to the individual gray-scale circuit 32_R).

Regarding claim 18, Okuzono discloses an LCD according to claim 17, wherein the value of the reference voltage is determined according to the color corresponding to the individual gray-scale voltage generating circuit coupled to the corresponding input voltage source (Column 12, lines 66-67 and Column 13, lines 1-7. The examiner interprets this to mean that color determines the reference voltage taken

from the common gray-scale voltage generating circuit which is supplied to the individual gray-scale voltage generating circuit which corresponds to that color and coupled to the input voltage source).

Regarding claim 19, Okuzono discloses an LCD according to claim 17, wherein the input nodes of each individual gray-scale voltage generating circuit are disposed therein according to the color corresponding to the individual gray-scale voltage generating circuit (Figure 6, items V_{R0}-V_{R17} are the input nodes which correspond to the individual gray-scale voltage generating circuit 32_R).

Regarding claim 20, Okuzono discloses an LCD according to claim 17, wherein each individual gray-scale voltage generating circuit has a plurality of output nodes for generating the individual gray-scale voltages according to the reference voltages (Figure 6, item 32_R and column 13, lines 49-55. The output nodes can be seen in Figure 6 running from between the resistors 34_1-34_{255} into item 25_R).

Regarding claim 21, Okuzono discloses an LCD according to claim 20, wherein each individual gray-scale voltage generating circuit is a series of resistors with a plurality of connecting nodes (Figure 6, item 32_R).

Regarding claim 22, Okuzono discloses an LCD according to claim 15, wherein the colors include red, green, and blue colors (Column 13, lines 39-42).

Regarding claim 23, Okuzono discloses an LCD according to claim 22, wherein the individual gray-scale voltage generating circuits are: a red gray-scale voltage generating circuit for generating a plurality of red gray-scale voltages (Figure 6, item 32_R and Column 13, lines 39-46); a green gray-scale voltage generating circuit for

generating a plurality of green gray-scale voltages (Column 13, lines 39-46); and a blue gray-scale voltage generating circuits for generating a plurality of blue gray-scale voltages (Column 13, lines 39-46); wherein the gamma correction circuit outputs the pixel voltage corresponding to the pixel signal according to: the common gray-scale voltages and the red gray-scale voltages when the pixel signal is used to display the red color (Figure 4, item 23, the common gray-scale voltages are generated, and item 25, which uses the common gray-scale voltages to produce the red gray-scale voltages in Figure 6, item 32_R); the gamma correction circuit outputs the pixel voltage corresponding to the pixel signal according to the common gray-scale voltages and the green gray-scale voltages when the pixel signal is used to display the green color (Figure 4, item 23, the common gray-scale voltages are generated, and item 25, which uses the common gray-scale voltages to produce the green gray-scale voltages in Figure 6, item 32_G, as explained in column 13, lines 39-46); and the gamma correction circuit outputs the pixel voltage corresponding to the pixel signal according to the common gray-scale voltages and the blue gray-scale voltages when the pixel signal is used to display the blue color (Figure 4, item 23, the common gray-scale voltages are generated, and item 25, which uses the common gray-scale voltages to produce the blue gray-scale voltages in Figure 6, item 32_B as explained in column 13, lines 39-46).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen G. Sherman whose telephone number is (571) 272-2941. The examiner can normally be reached on M-F, 8:00 a.m. - 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Edouard can be reached on (571) 272-7603. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SS

15 August 2005

XIAO WU
PRIMARY EXAMINER